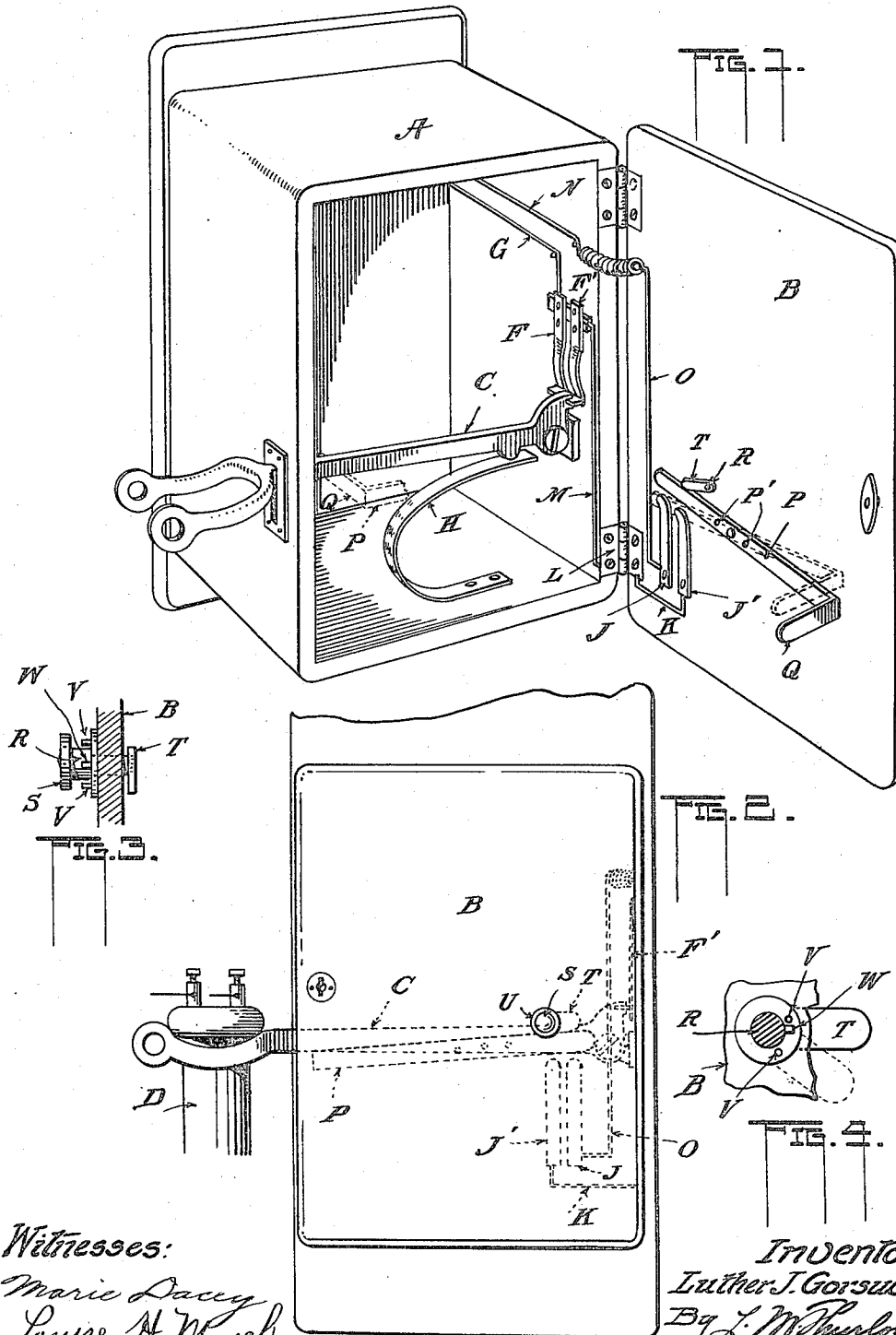


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 SWITCH MECHANISM FOR TELEPHONE SYSTEMS.  
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# UNITED STATES PATENT OFFICE.

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SWITCH MECHANISM FOR TELEPHONE SYSTEMS.

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Specification of Letters Patent.

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*To all whom it may concern:*

Be it known that I, LUTHER J. GORSUCH, citizen of the United States, residing at East Pleasant Plains, in the county of Jefferson and State of Iowa, have invented certain new and useful Improvements in Switch Mechanisms for Telephone Systems; and I do hereby declare that the following is a full, clear, and exact description of the invention, which will enable others skilled in the art to which it appertains to make and use the same.

This invention relates to improvements in telephone systems. It pertains primarily to an attachment for telephones of country line systems though adapted for use also on other systems.

The primary object of the invention is to provide a switch adaptable to any make or style of telephone instrument by which when the receiver of any one instrument of a party line system is lifted from its hook the battery in the transmitting circuit of that instrument will not be thrown into circuit and thus unnecessarily exhausted when conversation is not being carried on through said instrument.

Another object is to provide a switch adaptable to any make or style of telephone instrument by which when the receiver of any one instrument of a party line system is lifted from its hook the battery in the transmitting circuit of that instrument will not be thrown into circuit and thus unnecessarily exhausted, manual operation being required to move said switch to close the said transmitting circuit whenever conversation is to be carried on through said instrument.

Another object of the invention is to furnish a switch, adapted for use on any make or style of telephone, placed in the local transmitter battery circuit in each individual telephone of a party-line system so that when the receiver of any one telephone of a disinterested party on the system is lifted off of its "hook" for the purpose of "listening in" the talking or transmitting circuit on the line will not be interrupted or broken as to conversation carried on between any two or more other instruments; nor will sounds in the room containing the "listening" instrument be transmitted to the line to disturb subscribers in conversation, nor will the battery of that instrument be drawn upon or used while the receiver is down.

Each telephone of a party telephone sys-

tem known as a farmers' line is usually supplied locally with current from a battery and, as is well known, when the receiver of an instrument is removed from its hook the transmitting circuit is necessarily closed through said battery. This results of course whether or not that particular instrument is in use conversationally.

By the proper introduction of a switch into the system, however, so as to still cause the battery circuit to remain open when the hook is raised, the listening party can still hear the conversation without exhausting the battery in so doing, and can only be heard upon the line by completing the speaking circuit by means of said switch.

While devices for this purpose are not altogether new, the purpose of my invention is to provide a switch system that will be adaptable to any form or make of instrument and that will in consequence be "universal" in its adaptation.

To the end that the invention may be understood, I have provided the accompanying drawing, in which,

Figure 1 shows a telephone instrument in perspective with my invention applied thereto.

Fig. 2 is a front elevation of the instrument showing the relation of the parts in use.

Fig. 3 is an elevation of parts for the manual operation of the switch of my invention; and,

Fig. 4 is a part of the same shown in cross section.

A indicates the body or box of a telephone instrument and B its door. C is the usual hook for supporting the receiver D, Fig. 2, said hook being pivoted in any manner to the inner surface of one of the walls of the instrument, in this instance the inner surface of the said door B.

F F' are two spring terminals, one of them F, for example, being connected to the "line" by a conductor G. H is a spring mounted on the body A, its free end engaging the hook and exerting pressure continually upward upon the same whereby said hook will be raised to close the circuit across the said terminals F F' when the receiver is removed.

J J' are two spring terminals, the latter being connected with one of the other described terminals, for instance the terminal F', through conductors K, hinge L and con-

ductor M, the terminal J being connected to the line wire N by a conductor O. Two pairs of terminals are thus provided so that the local transmitter circuit is broken at two  
 5 places, one pair connected by the said hook C, the other pair to be connected by a hand operated switch to be described.

Pivoted on the door is a lever P, one of its ends including a right angled extension Q adapted to lie beneath the hook C as indicated in broken lines in Fig. 1, when the  
 10 door is closed. The opposite end of the lever is adapted to engage the spring terminals J J' so as to close the said local transmitter circuit between them.

Above that end of the lever which engages the spring terminals is a stem R which extends through the door. Its outer end carries a knob S and its inner end an arm T  
 20 adapted to bear upon the lever for depressing it to move it into engagement with said spring terminals. Suitable means is provided on the door for limiting the rotation of the knob S. As an example, an escutcheon  
 25 U secured to said door, and through which the stem extends, is furnished with two spaced extensions V forming stops, the said stem having an extension W limited in its movement by said stops. In one of its limits  
 30 of movements the arm depresses the lever and in the other the arm is raised far enough to permit the lever to be entirely disengaged from the spring terminals.

With the door closed the extension Q of  
 35 the lever P lies beneath the hook C and when the receiver is in position upon the hook the latter rests upon the lever holding it disengaged from the described spring terminals.

In this relation of the parts the ringing circuit is in condition to be used for signaling. Upon answering a call the act of removing the receiver would ordinarily cut out the ringing circuit and close the trans-  
 45 mitter circuit through the local battery so that the person sending in the call would hear the acknowledgment of the subscriber answering said call; but since the switch lever P of my arrangement is a part of the  
 50 local transmitter circuit and is open when the hook is raised the voice cannot be carried to the line until said switch lever is closed. The answering subscriber must therefore turn the knob S to depress said  
 55 lever P its end having the extension Q being raised. Since the receiver is off the hook C the latter at this time is in its highest position, due to the action of the spring H and permits said extension to be raised, the lever  
 60 being held in this position by its frictional engagement with the said terminals J J'.

The extensions on the escutcheon are for the purpose of preventing the arm T moving to a position that it would result in locking  
 65 said switch lever P in this position.

The act of replacing the receiver upon its hook depresses that end of the switch lever having the extension Q and disengages its other end from the terminals J J'. While  
 70 two or more subscribers are in conversation should one or more subscribers remove their receivers for the purpose of overhearing conversation upon the wire, the act of removing the receivers does not close the local transmitter circuit, it being required to  
 75 move the lever Q to close said circuit.

The batteries of the instruments through which conversation is being listened to are not thus thrown into circuit and are thus not drawn upon and there is the added advantage that noises will not be carried out upon  
 80 the line from such instruments.

While my invention is adapted for systems other than country lines it is particularly adapted for the latter since such lines  
 85 usually employ a battery at each phone which is quickly used up when no real or serious use is being made of the instrument.

In some makes of phones the hook C becomes part of certain circuits and in consequence it is required to insulate the switch  
 90 lever P from said hook C so that a short circuit will not occur.

It has already been stated that while the purpose of the invention is not new, the structure and arrangement described is new.  
 95 By this I mean that in other devices with which I am familiar the subscriber is enabled to make himself a nuisance upon the line by moving his switch lever up and down, thereby constantly making and breaking the circuit, producing a snapping in the receivers  
 100 of the instruments in use. But my arrangement prevents this from the fact that the switch lever P is entirely inclosed where it cannot be reached and can only be operated to complete the transmitter circuit by means  
 105 of the arm T, said arm having no other control of the lever.

By making the knob S small and arranging the fulcrum of the switch lever P so that the operation of the latter through the  
 110 said arm T will be somewhat tiresome the mischievous person will find no great pleasure in operating the knob and lifting the receiver hook in an alternate manner to cause the snapping on the line referred to.

The switch lever P is preferably provided with one or more apertures, two of which  
 115 are indicated at P' by which the fulcrum of said switch lever may be changed at will to suit the construction of the particular instrument to which it is to be applied.

The structure provided is such that it is adaptable to any make or style of instrument whereby the required results will be  
 120 obtained.

I do not wish to confine myself to the exact form and arrangement of the parts shown since slight variations may be made  
 130

that will still lie within the meaning and intent of the invention and the scope of the accompanying claims.

Having thus described my invention, I claim:—

1. In a device of the nature described, the combination with a pair of electric terminals constituting part of a local telephone transmitter circuit, and a receiver-supporting arm for connecting the two said terminals, of a second pair of terminals adapted to be connected in circuit with the first described pair of terminals and said local transmitter circuit, a switch lever adapted to be carried into engagement with said second pair of terminals for closing the circuit therethrough, said lever including an extension to engage said receiver-supporting arm, and means to move the lever manually into engagement with said second pair of terminals.

2. In a device of the nature described, the combination with a pair of electric terminals constituting part of a local telephone transmitter circuit, and a receiver-supporting arm for connecting the two said terminals, of a second pair of terminals adapted to be connected in circuit with the first described pair of terminals and said local transmitter circuit, a switch lever adapted to engage said second pair of terminals for closing the circuit therethrough, said lever including at one side of its fulcrum an extension to engage said arm, and means to move the lever manually into engagement with said terminals, said arm when depressed adapted to engage and automatically remove said switch lever from said second pair of terminals.

3. In a device of the nature described, the combination with a pair of terminals constituting part of a local transmitter circuit including a battery, an arm adapted in one of its positions to electrically connect said terminals, of a second pair of terminals connected electrically with the first said pair of terminals and the said transmitter circuit, a switch lever adapted to engage both said second terminals for connecting one electrically with the other, means for manually operating the switch lever in one direction to connect said terminals, said switch lever including an extension adapted to be engaged by the described arm and automatically operated by the said

arm in moving to its other position to remove said switch lever from the said second pair of terminals.

4. In a device of the nature described, the combination with an inclosure including a pair of terminals therein constituting part of a local transmitter circuit, an arm therein adapted in one of its extreme positions to engage and electrically connect said terminals, of a second pair of terminals connected electrically with said first pair of terminals and the said transmitter circuit, and likewise contained within said inclosure, a switch lever within said inclosure adapted to have two positions and in one of its positions arranged to electrically connect said second pair of terminals and having an extension in the path of movement of the said arm and adapted to be engaged and moved by the said arm when that member moves to its other extreme position whereby to disengage the switch lever from the described terminals, means extending outside the inclosure in position to be manually operated, the same including an extension within the inclosure to engage the arm and move it in but one direction.

5. In a device of the nature described, the combination with an inclosure, a pair of terminals constituting part of a local transmitter circuit, and an arm actuated from outside the inclosure and adapted in one of its extreme positions to electrically connect the said terminals, of a second pair of terminals mounted on the inner side of the door and electrically connected with the first described pair of terminals and said transmitter circuit, a switch lever pivoted on the inner side of the door in position to electrically connect the said second terminals, said switch lever including an extension in the path of the described arm and adapted to be operated automatically by the same in moving to one of its extreme positions, and means extending outside of the inclosure and carrying a part at its end within said inclosure to engage and move said switch lever into engagement with said second pair of terminals.

In testimony whereof I affix my signature in presence of two witnesses.

LUTHER J. GORSUCH.

Witnesses:

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